

CLAIMS

What is claimed is:

- 5 1. A data structure comprising:
 a superset comprising a primary database operatively connected to one
 or more secondary databases, wherein
 each of said primary and one or more secondary databases comprises
 a first table operatively linked to one or more other tables, and
10 each of said first and one or more other tables share a common data
 structure.
2. The data structure of claim 1, wherein each of said primary and one or
 more secondary databases are relational databases.
- 15 3. The data structure of claim 1, wherein said common data structure
 comprises a sparse matrix linked list.
4. The data structure of claim 1, wherein said common data structure
20 comprises a plurality of records containing data, said records arranged in hierarchical
 order, in a series of levels from general to specific, based upon said data.
5. The data structure of claim 1, wherein:
 said primary database includes source tables,
 a first secondary database includes alias tables,
25 a second secondary database includes standardization tables, and
 a third secondary database is configured to accept and store input data.

6. The data structure of claim 5, wherein:
said source tables comprise data records obtained from a public or
private source,
said alias tables comprise one or more equivalent representations of a
5 record, and
said standardization tables comprise one or more standardized
representations of a record.

7. The data structure of claim 6, wherein said source tables comprise
10 address records obtained from a government postal service and a commercial source.

8. The data structure of claim 1 for storing records comprising one or
more artifacts, wherein:
said first table includes preferred records,
15 a first other table includes primary alias records, and
a second other table includes secondary alias records.

9. The data structure of claim 8, wherein:
said preferred records comprise one or more preferred representations,
said primary alias records comprise one or more equivalent
20 representations of a primary artifact, and
said secondary alias records comprising one or more equivalent
representations of a secondary artifact.

10. The data structure of claim 9, wherein said preferred records comprise
25 one or more preferred representations of an address.

11. A method of preparing data for optimal searching, said data stored in one or more databases comprising a plurality of linked tables of records, comprising:
arranging said records in each of said tables in hierarchical order, in a series of levels from general to specific, based upon said data; and
transforming each of said tables into one or more sparse matrix linked list tables.

12. The method of claim 11, wherein said one or more databases exist in a server-client network environment, the method further comprising:
distributing a duplicate of said one or more sparse matrix linked list tables from a server to one or more clients.

13. The method of claim 11, wherein said one or more databases are relational databases interconnected to form a data superset.

14. The method of claim 11, wherein said data comprises address artifacts.

15. An apparatus for preparing data for optimal searching, said data stored in one or more databases comprising a plurality of linked tables of records, comprising:

a central processing unit;

a memory;

a basic input/output system; and

program storage containing a program module executable by said

central processing unit, said program module comprising:

means for arranging said records in each of said tables in

hierarchical order, in a series of levels from general to specific, based upon said data;

and

means for transforming each of said tables into one or more

sparse matrix linked list tables.

16. The apparatus of claim 15, further comprising:

one or more clients remote from said central processing unit, said

program module further comprising:

means for distributing a duplicate of said one or more sparse

matrix linked list tables from a server to one or more clients.

17. A method of using a database of linked tables to convert a subjective representation into a preferred representation, comprising:
capturing said subjective representation and storing it in a first one of said linked tables;

5 storing source data in a second one of said linked tables;
locating one or more candidate representations from among said source data by comparing said subjective representation to said source data;
selecting a preferred representation from among said one or more candidate representations, said preferred representation having the closest
10 resemblance to said subjective representation; and
releasing said preferred representation.

18. The method of claim 17, further comprising:
reviewing said source data to identify one or more select records
15 containing preferred data; and
adding a preferred token to said one or more select records;

19. The method of claim 17, wherein said step of selecting a preferred representation comprises identifying a preferred token associated with one of said
20 one or more candidate representations.

20. The method of claim 17, wherein said step of locating one or more candidate representations further comprises:

(a) parsing said subjective representation into one or more discrete artifacts;

(b) selecting one of said one or more discrete artifacts:

(1) locating one or more candidate artifacts from among

said source data by comparing said one discrete artifact to said source data;

(2) selecting a preferred artifact from among said one or more candidate artifacts, said preferred artifact having the closest resemblance to said

one discrete artifact;

(3) storing said preferred artifact;

(c) repeating step (b) for each of said one or more discrete

artifacts; and

(d) combining said preferred artifacts to form a preferred

representation.

21. The method of claim 17, wherein said step of locating one or more candidate representations further comprises:

storing alias data in a third one of said linked tables;

reviewing said alias data to identify one or more select alias records

containing a preferred alias representation;

adding a preferred alias token to said one or more select alias records;

locating one or more candidate aliases from among said alias data by

comparing said subjective representation to said alias data;

selecting a preferred alias from among said one or more candidate

aliases, said preferred alias being most closely associated with said preferred alias token; and

releasing said preferred alias as a candidate representation.

22. The method of claim 21, wherein said step of locating one or more candidate aliases further comprises:

(a) parsing said subjective representation into one or more discrete artifacts;

(b) selecting one of said one or more discrete artifacts:

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(1) locating one or more candidate alias artifacts from among said source data by comparing said one discrete artifact to said alias data;

(2) selecting a preferred alias artifact from among said one or more candidate alias artifacts, said preferred alias artifact being most closely associated with said preferred alias token;

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(3) storing said preferred alias artifact;

(c) repeating step (b) for each of said one or more discrete artifacts; and

(d) adding said preferred alias artifact to said preferred alias.

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23. An apparatus for using a database of linked tables to convert a subjective representation into a preferred representation, comprising:

a central processing unit;

a memory;

a basic input/output system; and

5 program storage containing a program module executable by said central processing unit, said program module comprising:

means for capturing said subjective representation and storing

10 it in a first one of said linked tables;

means for storing source data in a second one of said linked

tables;

means for locating one or more candidate representations from

among said source data by comparing said subjective representation to said source data;

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means for selecting a preferred representation from among

said one or more candidate representations, said preferred representation having the closest resemblance to said subjective representation; and

means for releasing said preferred representation.

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24. The apparatus of claim 23, said program module further comprising:

means for reviewing said source data to identify one or more select

records containing preferred data; and

means for adding a preferred token to said one or more select records;

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25. The apparatus of claim 23, said program module further comprising:

means for identifying a preferred token associated with one of said

one or more candidate representations.

26. The apparatus of claim 23, wherein said means for locating one or more candidate representations further comprises:

(a) means for parsing said subjective representation into one or more discrete artifacts;

5 (b) means for selecting one of said one or more discrete artifacts:

(1) means for locating one or more candidate artifacts from among said source data by comparing said one discrete artifact to said source data;

10 (2) means for selecting a preferred artifact from among said one or more candidate artifacts, said preferred artifact having the closest resemblance to said one discrete artifact;

(3) means for storing said preferred artifact;

(c) means for repeating step (b) for each of said one or more discrete artifacts; and

15 (d) means for combining said preferred artifacts to form a preferred representation.

27. The apparatus of claim 23, wherein said means for locating one or more candidate representations further comprises:

- means for storing alias data in a third one of said linked tables;
- means for reviewing said alias data to identify one or more select alias records containing a preferred alias representation;
- 5 means for adding a preferred alias token to said one or more select alias records;
- means for locating one or more candidate aliases from among said alias data by comparing said subjective representation to said alias data;
- 10 means for selecting a preferred alias from among said one or more candidate aliases, said preferred alias being most closely associated with said preferred alias token; and
- means for releasing said preferred alias as a candidate representation.

28. The apparatus of claim 27, wherein said means for locating one or more candidate aliases further comprises:

(a) means for parsing said subjective representation into one or more discrete artifacts;

5 (b) means for selecting one of said one or more discrete artifacts:

(1) means for locating one or more candidate alias artifacts from among said source data by comparing said one discrete artifact to said alias data;

10 (2) means for selecting a preferred alias artifact from among said one or more candidate alias artifacts, said preferred alias artifact being most closely associated with said preferred alias token;

(3) means for storing said preferred alias artifact;

(c) means for repeating step (b) for each of said one or more discrete artifacts; and

15 (d) means for adding said preferred alias artifact to said preferred alias.

29. A method of controlling access to a database by one or more external applications, comprising:

establishing and storing a plurality of rule sets, each correlated to one

of said one or more external applications;

receiving a request from a first application;

retrieving a first rule set correlated to said first application; and

applying said first rule set to control the interaction between said first application and said database.

30. The method of claim 29, wherein said first rule set includes a list of data available for capture from said database for use by said first application.

31. A method of controlling the depth of data capture within a database in response to a request from one or more external applications, comprising:
- establishing and storing a plurality of rule sets, each correlated to one of said one or more external applications,
 - 5 each of said plurality of rule sets including a list of data to capture from said database;
 - receiving a request from a first application;
 - retrieving a first rule set correlated to said first application; and
 - 10 applying said first rule set to limit the data available to said first application from said database.

32. A data structure comprising:
a database linking a primary table and one or more secondary tables,
each of said tables sharing a common data structure;
said database controlled by a database management system configured
5 to transform one or more of said tables into a sparse matrix linked list.

33. The data structure of claim 32, wherein said database comprises one
or more interconnected relational databases.

10 34. The data structure of claim 32, wherein said database management
system comprises an interface and a validation module.

35. The data structure of claim 34, wherein said interface controls access
to said database by one or more external applications.

15 36. The data structure of claim 32, wherein said database management
system is further configured to convert data from a subjective representation into a
preferred representation.

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37. A data structure for use in a database management system,

comprising:

a first table of values representing preferred characterizations of a

parameter;

a second table of values representing input data characterizing a

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parameter;

a third table of values arranged in a hierarchy to facilitate the process

of matching said input data to a corresponding preferred characterization,

wherein each of said tables comprises a sparse matrix linked list.

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- 5 38. A method for characterizing a parameter, comprising:
receiving input data characterizing a parameter in a first table;
modifying said input data in accordance with a table of alias
characterizations stored in a second table; and
matching the modified input data to a preferred characterization stored
in a third table.

39. An address management system comprising:
a superset comprising a primary database operatively connected to one
or more secondary databases, each of said databases comprising a plurality of linked
tables, and each of said tables sharing a common data structure;
an enhancement module configured to transform one or more of said
5 tables into a sparse matrix linked list;
a publication and subscription module for controlling the distribution
of data in a server-client network environment;
a matching and validation module for converting a subjective
10 representation of an address into a preferred representation of said address; and
an interface for controlling access to said superset by one or more
external applications.

40. The system of claim 39, wherein said enhancement module is further
15 configured to arrange the records of one or more of said tables in hierarchical order,
in a series of levels from general to specific, based upon said data.

41. The system of claim 39, wherein:
said primary database includes source tables,
20 a first secondary database includes alias tables,
a second secondary database includes standardization tables, and
a third secondary database is configured to accept and store input data.

42. The system of claim 41, wherein:
said source tables comprise data records obtained from a public or
private source,
said alias tables comprise one or more equivalent representations of a
5 record, and
said standardization tables comprise one or more standardized
representations of a record.

43. The system of claim 42, wherein said source tables comprise address
10 records obtained from a government postal service and a commercial source.

44. The system of claim 40 for storing records comprising one or more
address artifacts, wherein:
a first table includes preferred records,
a second table includes primary alias records, and
15 a third table includes secondary alias records.

45. The system of claim 44, wherein:
said preferred records comprise one or more preferred representations,
said primary alias records comprise one or more equivalent
20 representations of a primary address artifact, and
said secondary alias records comprising one or more equivalent
representations of a secondary address artifact.

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